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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/526,905	06/19/2012	Pradipta K. Banerjee	IN920120062US1	5899
82553	7590	11/02/2017	EXAMINER	
Walter W. Duft P.O. Box 378 Clarence Center, NY 14032			MASUD, ROKIB	
			ART UNIT	PAPER NUMBER
			3687	
			NOTIFICATION DATE	DELIVERY MODE
			11/02/2017	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* PRADIPTA K. BANERJEE, VAIDYANATHAN SRINIVASAN,  
and VIJAY K. SUKTHANKAR

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Appeal 2016-005041<sup>1</sup>  
Application 13/526,905<sup>2</sup>  
Technology Center 3600

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Before NINA L. MEDLOCK, BRADLEY B. BAYAT, and  
TARA L. HUTCHINGS, *Administrative Patent Judges*.

BAYAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 8, 9, 12–16, and 19–21 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.<sup>3</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

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<sup>1</sup> Our Decision references Appellants' Appeal Brief ("App. Br.," filed Aug. 3, 2015) and Reply Brief ("Reply Br.," filed Apr. 11, 2016), the Examiner's Answer ("Ans.," mailed Feb. 12, 2016), and the Final Office Action ("Final Act.," mailed Mar. 3, 2015).

<sup>2</sup> Appellants identify "International Business Machines Corporation" as the real party in interest. App. Br. 2.

<sup>3</sup> Claims 1–7, 10, 11, 17, and 18 have been canceled. *Id.* at 21–24 (Claims App'x.).

## STATEMENT OF THE CASE

### *Claimed Subject Matter*

Appellants’ “disclosure relates to cloud-based computing systems. More particularly, the disclosure concerns power management on cloud server hosts running virtual machines on behalf of customers.” Spec. ¶ 1.

Claims 8 and 15 are the independent claims on appeal. Claim 8, reproduced below, is illustrative of the claimed subject matter.

8. A system, comprising:
  - one or more processors;
  - a memory operatively coupled to said one or more processors;
  - program instructions stored in said memory for programming said one or more processors to perform operations for fairly distributing power savings benefits to virtual machines (VMs) provisioned to customers in a computing cloud, said operations comprising:
    - provisioning one or more VMs on a target cloud host in response to resource requests from one or more customer devices;
    - monitoring host power savings on said target host;
    - using said host power savings as a variable component in determining per-customer cloud usage for accounting purposes;
    - said host power savings being used to calculate metered cost savings that are distributed proportionately to said VMs;
  - and
  - said metered cost savings being distributed to said VMs based on VM size and utilization.

App. Br. 21, Claims App’x.

## ANALYSIS

Under 35 U.S.C. § 101, an invention is patent-eligible if it claims a “new and useful process, machine, manufacture, or composition of matter.” 35 U.S.C. § 101. The Supreme Court, however, has long interpreted § 101

to include an implicit exception: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *See, e.g., Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014) (internal quotation marks and citation omitted).

The Supreme Court, in *Alice*, reiterated the two-step framework previously set forth in *Mayo Collaborative Services v. Prometheus Laboratories, Incorporated*, 566 U.S. 66, 82–84 (2012), “for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 134 S. Ct. at 2355. The first step in that analysis is to “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Id.* If the claims are not directed to a patent-ineligible concept, e.g., to an abstract idea, the inquiry ends. Otherwise, the inquiry proceeds to the second step where the elements of the claims are considered “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. 66, 79, 78).

Applying the framework in *Alice*, and as the first step of that analysis, the Examiner maintains:

Here, the claims are directed to system and computer program product comprising the steps of provisioning one or more virtual machines, monitoring host power savings, using savings as [a] variable [in] determining cloud usage that are calculated to determine metered cost savings[,] and distributing the savings. This is considered to be an abstract idea of calculating cost savings to distribute to virtual machines based on variables, because it [] amounts to nothing more than a mathematical formula to distribute savings.

Ans. 3. Proceeding to the second step, the Examiner determines that the additional elements recited are generic computer components performing functions similar to the computer functions described in *Alice Corp.* as being well-understood, routine, and conventional. More specifically, the recited elements[,] such as [a] processor [and] memory[,] merely perform generic functions[,] such as processing and calculating data. These features are similar to computer operations[,] such as “creating and maintaining [] accounts,” “obtaining data,” “adjusting account balances” and “issuing automated instructions,” which the Court in *Alice Corp.* considered “purely conventional.”

*Id.* at 4.

*Independent claim 8*

Appellants initially contend that a prima facie case has not been established because the Examiner does not adequately explain why the subject matter of claim 8 is considered to be an abstract idea and why it preempts such an idea. App. Br. 11. Appellants further contend that “the Examiner has not cited any case law in which concepts similar to the alleged abstract idea of applicants’ claims have been found to be abstract.” Reply Br. 6–8 (citing the USPTO’s July 2015 Update: Subject Matter Eligibility, Section III).

As to the question of establishing a prima facie case, the Federal Circuit has made clear that “the prima facie case is merely a procedural device that enables an appropriate shift of the burden of production.” *Hyatt v. Dudas*, 492 F.3d 1365, 1369 (Fed. Cir. 2007) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992)). 35 U.S.C. § 132 sets forth a general notice requirement whereby the applicant is notified of the reasons for a rejection together with such information as may be useful in judging the propriety of continuing with prosecution of the application. *See, e.g., In re*

*Jung*, 637 F.3d 1356, 1362 (Fed. Cir. 2011). In this case, the Examiner provided adequate explanation to meet the notice requirement. The Examiner set forth the statutory basis of the rejection, applied *Alice*'s two-part framework, and sufficiently articulated reasoning in an informative manner, thus, meeting the notice requirement of 35 U.S.C. § 132. *Chester v. Miller*, 906 F.2d 1574, 1578 (Fed. Cir. 1990) (Section 132 "is violated when a rejection is so uninformative that it prevents the applicant from recognizing and seeking to counter the grounds for rejection."). There is no requirement for the Examiner to cite examples from PTO guidelines or any additional case law to establish a prima facie case.

There also is no requirement under *Alice* for the Examiner to make an explicit finding as to preemption. Although the Supreme Court has described "the concern that drives this exclusionary principle [i.e., the exclusion of abstract ideas from patent eligible subject matter] as one of preemption," see *Alice Corp.*, 134 S. Ct. at 2354, characterizing pre-emption as a driving concern for patent eligibility is not the same as characterizing pre-emption as the sole test for patent eligibility. "The Supreme Court has made clear that the principle of preemption is the basis for the judicial exceptions to patentability" and "[f]or this reason, questions on preemption are inherent in and resolved by the § 101 analysis." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) (citing *Alice Corp.*, 134 S. Ct. at 2354). Yet although "preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility." *Id.*; see also *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015), cert. denied, 136 S. Ct. 701 (2015) ("[T]hat the claims do not preempt all price optimization or may be limited

to price optimization in the e-commerce setting do not make them any less abstract.”). Therefore, the Examiner properly established a prima facie case of unpatentability, and the burden then shifted to Appellants to rebut the prima facie case.

In the Reply Brief, Appellants contend that the change in the Examiner’s characterization of the alleged abstract idea from the final rejection is unfair and “warrants a remand back to the Examiner with an order directing that prosecution be reopened for the purpose of entering a new Office Action that allows Applicants to consider a full range of available response options.” Reply Br. 5. But if Appellants genuinely believed that the Answer improperly introduced a new ground of rejection, Appellants had ample opportunity to raise this issue by filing a timely petition under 37 C.F.R. § 1.181.<sup>4</sup> Appellants instead chose to maintain the appeal and provide arguments for review and consideration by the Board responsive to the Examiner’s Answer by filing a Reply Brief under 37 C.F.R. § 41.41. Thus, Appellants cannot reasonably complain now that they have been denied a fair opportunity to respond to the rejection.

Turning now to the merits under the first step of *Alice*, we must evaluate “the ‘focus of the claimed advance over the prior art’ to determine if the claim’s ‘character as a whole’ is directed to excluded

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<sup>4</sup> Any request to seek review of the examiner’s failure to designate a rejection as a new ground of rejection in an examiner’s answer must be by way of a petition to the Director under 37 C.F.R. § 1.181 filed within two months from the entry of the examiner’s answer and before the filing of any reply brief. Failure of appellant to timely file such a petition will constitute a waiver of any arguments that a rejection must be designated as a new ground of rejection. See 37 C.F.R. § 41.40(a).

subject matter.” *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016).

In that regard, Appellants’ Specification discloses that power management features in cloud server host hardware and subsequent exploitation at the operating system level enables significant cost savings due to efficiently managing server power consumption based on utilization. The lower the utilization, the higher the power savings. For a data center provider, cost savings due to power usage savings drive better ROI (Return On Investment) for a virtualized or cloud scenario. Currently, however, all such benefits are enjoyed by the provider only. Customers typically pay a fixed charge to the provider based on cloud resource usage. As far as known, current systems do not pass on the benefits of low power usage to the user.

Spec. ¶ 2. According to Appellants, the exclusive retention of such cost savings by the provider without passing any benefit to customers is disadvantageous because there is no motivation for customers “to select a cloud provider with more power efficient hardware and software that would contribute to reduction in energy utilization.” *Id.* The inventors solved this problem by providing “a distribution mechanism to pass on the benefits accruing from data center power savings to customers.” *Id.* ¶ 3.

In light of the Specification’s description of the problem and solution, the advance over the prior art by the claimed invention is in providing an incentive or motivation for a customer to choose an energy efficient provider. Cost “savings are used as a variable component in determining per-customer cloud usage for accounting purposes.” *Id.* ¶ 4. In other words, Appellants’ alleged innovation lies in calculating and distributing to customers proportional metered power cost savings “(e.g., a power savings



credit).” *Id.* ¶ 27. The claimed invention is drawn to a system for “fairly distributing power savings benefits to virtual machines (VMs) provisioned to customers in a computing cloud,” or calculating and distributing a proportional share of cost savings to a customer based on the customer’s resource utilization. Offering an incentive in the form of a savings credit is simply an age-old marketing ploy to entice a customer to enter into an agreement with a provider—the determination of which involves a mathematical formula/calculation, thus encompassing an abstract concept.<sup>5</sup> *Content Extraction and Transmission LLC v. Wells Fargo Bank, Nat. Ass’n*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) (explaining claims directed to “the mere formation and manipulation of economic relations” and “the performance of certain financial transactions” have been held to involve abstract ideas); *see also*

There is a fundamental difference between computer functionality improvements, on the one hand, and uses of existing computers as tools to perform a particular task, on the other. The Federal Circuit applied this distinction in *Enfish*<sup>6</sup> in rejecting a § 101 challenge at the step-one stage in the *Alice* analysis because the claims at issue focused, not on asserted advances in uses to which existing computer capabilities could be put, but on a specific type of data structure, i.e., a self-referential table for a computer database, designed to improve the way a computer carries out its basic functions of storing and retrieving data. *Id.* at 1335–36. Unlike the claims

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<sup>5</sup> *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1240–41 (Fed. Cir. 2016) (“An abstract idea can generally be described at different levels of abstraction.”).

<sup>6</sup> *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016).

found non-abstract in prior cases, the claims here use generic computer technology to calculate metered cost savings, wherein each VM is allocated a share of cost savings based on its size and utilization, and the claims do not recite an improvement to a particular computer technology. *See, e.g., McRO*,<sup>7</sup> 837 F.3d at 1314–15 (finding claims not abstract because they “focused on a specific asserted improvement in computer animation”). The alleged advantages that Appellants tout do not concern an improvement to computer capabilities, but instead relate to an alleged improvement in customer acquisition by providing an incentive or motivation for a customer to choose an energy efficient provider, for which a computer is used as a tool in its ordinary capacity to calculate said incentive. Thus, we are not apprised of error as to the Examiner’s determination of the abstract idea.

Appellants contend that even if the pending claims are directed to an abstract idea, “the claims recite subject matter that improves the function of a cloud computing environment by providing a novel solution to an identified power consumption and energy usage problem.” App. Br. 13; *see also* Reply Br. 10–11 (“these operations provide an improvement in the operation of a cloud computing environment that addresses a problem of minimizing power consumption and energy usage.”). We find Appellants’ contentions unpersuasive because, as discussed above, there is no inventive concept or technological advance here that would support patent eligibility. Claim 8 is not focused on an improvement to the claimed “one or more processors.” *Cf. In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 613 (Fed. Cir. 2016) (The claims’ focus “was not on an improved

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<sup>7</sup> *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016).

telephone unit or an improved server.”). And merely limiting the scope of the claims to a particular technological environment or application, without more, does not change the outcome.

It is well-established by now that the introduction of a generic computer or computing environment into the claims does not alter the analysis here because

the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention. Stating an abstract idea “while adding the words ‘apply it’” is not enough for patent eligibility. Nor is limiting the use of an abstract idea “to a particular technological environment.” Stating an abstract idea while adding the words “apply it with a computer” simply combines those two steps, with the same deficient result. Thus, if a patent’s recitation of a computer amounts to a mere instruction to “implemen[t]” an abstract idea “on . . . a computer,” that addition cannot impart patent eligibility. This conclusion accords with the pre-emption concern that undergirds our § 101 jurisprudence. Given the ubiquity of computers, wholly generic computer implementation is not generally the sort of “additional featur[e]” that provides any “practical assurance that the process is more than a drafting effort designed to monopolize the [abstract idea] itself.”

*Alice* at 2358 (citations omitted). The relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea on a generic computer. *Id.* at 2359. We conclude that they do not.

Instead, we agree with the Examiner that the claimed invention merely requires generic computer implementation and fails to transform the abstract idea into a patent eligible invention. The introduction of a processor, memory, or virtual machines in a computing cloud environment does not alter the analysis under the second step of *Alice*. See *Alice*, 134 S.

Ct. at 2358; *see also, e.g., Mortg. Grader, Inc. v. First Choice Loan Servs. Inc.*, 811 F.3d 1314, 1324–25 (Fed. Cir. 2016) (explaining that “generic computer components such as an ‘interface,’ ‘network,’ and ‘database’ . . . do not satisfy the inventive concept requirement” (citations omitted)). The functions performed by the claimed system embody basic functions of a computer that amount to nothing more than programming conventional software or hardware to perform a mathematical operation. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d at 1363 (“relying on a computer to perform routine tasks more quickly or more accurately is insufficient to render a claim patent eligible”); *see also Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016) (“Nothing in the claims, understood in light of the specification, requires anything other than off-the-shelf, conventional computer, network, and display technology for gathering, sending, and presenting the desired information.”). Indeed, Appellants’ Specification indicates that “[t]he processors 64 may comprise general purpose processors.” Spec. ¶ 29; *see also id.* ¶¶ 30–34.

Taking the claim elements separately, the function performed by the computer in each limitation of the claimed system is purely conventional. Using a processor and memory for storing data, receiving and processing requests, and performing a calculation embodies some of the most basic functions of a computer. All of these computer functions are well-understood, routine, and conventional activities previously known to the industry. In short, each step does no more than require a generic computer to perform generic computer functions. Considered as an ordered combination, the computer components of Appellants’ system add nothing that is not already present when the limitations are considered separately.

Contrary to Appellants' arguments (Reply Br. 9–11), the recited claim language is not sufficient to make the invention “rooted in computer technology” like the claims in *DDR Holdings*<sup>8</sup> or *Research Corporation Technologies*.<sup>9</sup> Cf. *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1371 (Fed. Cir. 2015) (“The patent claims here do not address problems unique to the Internet, so *DDR* has no applicability.”). For example, in *DDR Holdings*, the Federal Circuit determined that, although the patent claims at issue involved conventional computers and the Internet, the claims addressed the problem of retaining website visitors who, if adhering to the routine, conventional functioning of Internet hyperlink protocol, would be transported instantly away from a host’s website after “clicking” on an advertisement and activating a hyperlink. *DDR Holdings*, 773 F.3d at 1257. The Federal Circuit, thus, held that the claims were directed to statutory subject matter because they recite a solution “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.” *Id.* Unlike the situation in *DDR Holdings*, Appellants do not identify any problem particular to computer networks and/or the Internet that claim 8 allegedly overcomes.

Appellants' reliance on the *Research Corporation Technologies* decision is also misplaced. There, the court observed that the claimed methods (i.e., claims 1 and 2 of US 5,111,310 and claim 11 of US 5,341,228) “address ‘a need in the art for . . . halftone rendering of gray scale images in which a digital data processor is utilized in a simple and

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<sup>8</sup> *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245 (Fed. Cir. 2014).

<sup>9</sup> *Research Corporation Technologies, Inc. v. Microsoft Corporation*, 627 F.3d 859 (Fed. Cir. 2010).

precise manner to accomplish the halftone rendering.” *Research Corporation Technologies*, 627 F.3d at 868–69 (citations omitted). Even though the claimed combination incorporated, in significant part, algorithms and formulas that control the masks and half-toning, the court found that “[t]he invention presents functional and palpable applications in the field of computer technology.” *Id.* at 869. Here, no analogous improvements in the field of computer technology is recited. Rather, the system claimed is performing a business marketing scheme by employing a mathematical operation that is implemented by a generic processor (claim 8). The computer is used to perform a function commonly performed by generic processors; that is, to conduct a “mathematical operation.” *Cf. Bancorp Servs., L.L.C. v. Sun Life Assur. Co. of Canada (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (citing *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)) (a computer is used “for its most basic function, the performance of repetitive calculations”). Thus, in contrast to *Research Corporation Technologies*, the instant claims describe purely conventional computing functions.

In view of the foregoing, we sustain the Examiner’s rejection of independent claim 8 under 35 U.S.C. § 101.

*Dependent claims 9, 12, 13, and 14*

We have considered Appellants’ contentions as to dependent claims 9, 12, 13, and 14, but we are not persuaded that these claims add anything significantly more to transform the abstract idea. For example, claim 9 further identifies the host power savings as a variable component in a cloud usage calculation result. Claims 12–14 describe the correlation between VM size and utilization in calculating cost savings share for a given VM. In other words, the dependent claims limit the scope of the abstract idea to

which independent claim 8 is directed but its character remains unchanged, especially given that these dependent claims provide no insight to improvements in computer functionality beyond what one would expect from using a generic computer as a tool in performing the scheme as claimed.

Accordingly, we are not apprised of error, and, thus, we sustain the rejection of claims 9, 12, 13, and 14.

*Independent claim 15 and dependent claims 16 and 19–21*

Appellants rely on arguments made with respect to claims 8, 9, and 12–14 in contesting the rejection of claims 15, 16, and 19–21. *See* App. Br. 20. Therefore, we sustain the rejection of claims 15, 16, and 19–21 for the same reasons as claims 8, 9, and 12–14.

#### DECISION

The Examiner's rejection under 35 U.S.C. § 101 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED